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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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Joseph I. Chamdani

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EXAMINER

PWU, JEFFREY C

ART UNIT

PAPER NUMBER

2143

DATE MAILED: 04/21/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/944,425

Applicant(s)

CHAMDANI ET AL.

Examiner

Jeffrey C. Pwu

Art Unit

2143

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE ____ MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☐ Claim(s) ____ is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☐ Claim(s) ____ is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on ____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. ____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. ____. |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date ____. | 6) <input type="checkbox"/> Other: ____. |

DETAILED ACTION

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claims 1-50 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hu et al. (U.S. 6,535,518) in view of Lee (U.S. 6,894,979) and Rao (U.S. 5,828,905)

Per Claim 1,

Hu et al. disclose a network system and method substantially claimed including: a storage device (Storage A (or SAN) ; 110); a server (120); a network switch (101); and a unified networking device configured to provide a single-hop communication path between the storage device and the server, a single-hop communication path between the storage device and the network switch, and a single-hop communication path between the server and the network switch/router (100).

Hu et al. do not expressly show the details of protocol conversion. Hu et al. fails to show “identifying a first communication protocol of an incoming packet, the incoming packet destined for a destination port associated with a second communication protocol; determining if the first communication protocol matches the second communication protocol; determine if the first communication protocol and the second communication protocol have a common layer if the first communication protocol does not match the second communication protocol; and

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encapsulating the incoming packet in the second communication protocol if the first communication protocol and the second communication protocol have a common layer.”

Hu et al. do not expressly show an application specific integrated circuit (ASIC) to determine that an incoming packet requires protocol conversion and send at least a portion of the incoming packet to a network processing unit in response to the determination and the network processing unit.

It is well known to convert data from one protocol to another in a multiple protocol network environment. Lee teaches, as illustrated in Figs. 2, 3, & 4, the details of protocol conversion and translation of the data which involves identifying the data payload of a packet in a first protocol and then formatting the data into a packet of a second protocol. Thus, the data payloads carried by the packets of the respective protocols will be essentially the same, and the headers and other overhead information associated with the packets will be determined by the respective protocols. Lee further teaches “the data, including the data payload and protocol-related overhead information, is treated as the data payload of the packets in the second protocol. The overhead information associated with the first protocol is not discarded. If it is intended in a particular environment to convert data from the first protocol into a second protocol, and then back into the first protocol, it may be desirable to convert the data from the first protocol to the second by encapsulating it. This may improve the efficiency of the conversion back to the first protocol because the data payload is already formatted according to the first protocol--it is not a raw data payload which needs to be reformatted according to the first protocol.” (Hu et al. – col.4, lines 5-58)

Lee teaches the well known method of the protocol conversion (Lee - col.4, lines 53-55) to improve the efficiency of data conversion from the first protocol to the second protocol by identifying a first communication protocol of an incoming packet, determining if the first communication protocol matches the second communication protocol, determine if the first communication protocol and the second communication protocol have a common layer if the first communication protocol does not match the second communication protocol, and encapsulating the incoming packet in the second communication protocol if the first communication protocol and the second communication protocol have a common layer.

It is well known to customize an integrated circuit into ASIC to perform protocol conversion to reduce the costs and to provide support for protocol conversions between various connectors. Rao teaches the well know method of using a single chip protocol conversion feature, to reduce the cost and simplify cable connections. (abstract; col.1, lines 15-35; col.1, lines 39-45; col.4, lines 15-col.5, line 37)

It would have been obvious to a person having ordinary skill in the art at the time of the invention was made to modify the network system/method of Hu et al. for bypassing a server to achieve higher throughput between data network and data storage systems to convert data from one protocol to another as taught by Lee and to use an ASIC chip to facilitate a single chip protocol conversions among various connectors as taught by Rao.

Per claim 2, The network system of claim 1, wherein the unified networking device is further configured to provide a single-hop communication path between the storage device and a router (Hu et al. - 101H110), a single-hop communication path between the server and the router

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(Hu et al. - 101H120), and a singlehop communication path between the network switch and the router (Hu et al. - 130H101).

Per claim 3, The network system of claim 1, further comprising a second storage device and the unified networking device is further configured to provide a single-hop communication path between the storage device and the second storage device (col.8, line 30-col.9, line 24).

Per Claim 4, The network system of claim 1, wherein the network switch is a load balancing network switch (Hu et al. - col.8, lines 1-25; abstract).

Per Claim 5, The network system of claim 1, wherein the storage device is a Redundant Array of Independent Disks (Hu et al. - col.9, lines 43-47).

Per Claim 6, The network system of claim 1, wherein the storage device is a Just a Bunch of Disks (Hu et al. - col.9, lines 43-47).

Per Claim 7, The network system of claim 1, wherein the storage device is a tape drive (Hu et al. - col.9, lines 43-47).

Per Claim 8, The network system of claim 1, wherein the unified networking device is configured to communicate with a plurality of servers (Hu et al. - col.9, lines 43-47).

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Per Claim 9, The network system of claim 1, wherein the unified networking device includes a plurality of line cards each having at least one port capable of transmitting packets, and a switch card configured to communicate with the plurality of line cards across a backplane (Hu et al. - col.7, line 1-col.10, line 27; It is inherent a "Decoding and Control Unit", "Controller", "Scheduler and Flow Control", "Router", "Buffering", and "Medium Interfaces" must use interconnecting ports and switches).

Per Claim 10, The network system of claim 9, wherein the unified networking device includes sixteen line cards each having sixteen ports, and four switch cards, where each switch card is configured to communicate with every other switch card and each line card (Hu et al. - fig.4, 16-line cards).

Per Claim 11, The network system of claim 9, wherein each of the plurality of line cards includes a packet processor in communication with the backplane (Hu et al. - col.13, line 50-col.14, line 6).

Per Claim 12, The network system of claim 11, wherein each packet processor is an application specific integrated circuit (Hu et al. - col.13, line 50-col.14, line 6).

Per Claim 13, The network system of claim 9, wherein the switch card includes at least one flow control application specific integrated circuit and a crossbar switch (Hu et al. - fig.4, "Data Driven Multi-processor Pipelined Model").

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Claims 14-50 are similarly rejected as in claims 1-13.

Response to Arguments

3. Applicant's arguments with respect to claims 1-50 have been considered but are moot in view of the new ground(s) of rejection.

4. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jeffrey C. Pwu whose telephone number is 571-272-6798.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David Wiley can be reached on 571-272-3923. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



4/17/06

JEFFREY PWU
PRIMARY EXAMINER